

ex humus soil; 1 female, Manipur: Moirang, near INA Memorial, ex decaying grasses; 1 female, Meghalaya: Khasi Hills, Ranikar, 16. iii. 1974, ex soil litter; 2 females, Garo Hills, Baghmara, 16. iii. 1974, ex dung heap; 2 females and 2 males, Nagaland: Kohima-1459 m, 25. xii. 1980, ex refuse dump; 2 females, Mokokchung, 25. xii. 1980, ex *Copris* sp.; 2 females, New Delhi; JNU Campus, 2. vii. 1981, ex leaf litter; 2 females, Pondicherry: Botanical Garden, 8. iii. 1980, dung heap; 3 females and 2 males, Tamil Nadu: Coimbatore, T.N.A.U. campus, Central dairy Farm, 13. iii. 1980, ex dung heap; 2 females; Madras, Adiyar, near I.I.T., 6. iii. 1980, ex ass dung; 3 females, Madras Deer Park, 6. iii. 1980, ex leaf litter; 4 females, Madras, Zoo Garden, 5. iii. 1980, ex grassy soil; 2 females, Tripura: Agartala, Arundhutinagar, 8. x. 1978, ex dung heap, R.P. Shah coll.; 2 females, Sabrum, near Inspection Bungalow, 14. x. 1978, ex compost heap, R.P. Shah coll., 2 females, Dharmanagar, 3. x. 1978, ex decaying grasses, R.P. Shah coll.; 3 females, West Bengal: 24 Pargana Dist., Sonarpur, Sitala, collection data unstated, *Heliocopris bucephalus* (F.) S.K. Bhattacharyya coll.; 9 females, 24 Parganas District, 15. iii. 1976, *Heliocopris dominus* Bates, S.K. Bhattacharyya coll.

Distribution: China (Samsinak 1962, Cas. csl. spol. entom. 59: 186-204) and India.

INDIA: Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Nagaland, Pondicherry, Tamil Nadu,

Tripura and West Bengal.

Remarks: The species is very common in India occurring in various litter, soil and dung samples and also in association with beetles. According to Samsinak's description, the dorsal setae j1, j4 and s2 are of the same appearance with their terminations club-like and smooth; but these setae are mostly with distal pilosity in the material collected in India. Lateral margins are smooth in Indian specimens in contrast to their Chinese counterpart. Since the original description, the present report represents the first subsequent collection from another geographic region. The male is recorded for the first time. Sternal shield features and the nature of dorsal chaetotaxy of the species are typical of the *glaber* group.

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32. TWO ADDITIONAL SPECIES OF BRASSICACEAE FOR THE FLORA OF ORISSA

(With a text figure)

During a critical study of herbarium and live specimens of the family Brassicaceae pertaining to the flora of Orissa. We came across two wild species of the family which have not hitherto been reported to occur in the state. These two taxa turned out to be new plant records for Orissa and are of considerable phytogeographical significance. Nomenclature, short

botanical description, phenology, collection number, place and date of collection, ecological and nomenclatural notes, etc. have been provided for both the species. The specimens have been housed in the Herbarium of Regional Plant Resource Centre, Bhubaneswar (RPRC).

Cardamine scutata Thunb., Trans. Linn. Soc.

Lond. 2: 339. 1794; Hara, Journ. Fac. Sci. Univ. Tokyo Bot. 6:59. 1952; Babu, Herb. Fl. Dehra Dun 57. 1977. (*Cardamine hirsuta* Linn. var. *sylvatica* sensu Haines, Bot. Bihar and Orissa 1: 27. 1921 (non *Cardamine sylvatica* Linn.; 1803).

Sub-erect, glabrous or puberulous, annual herbs. Stem simple or sparsely branched, obscurely ribbed. Leaves alternate, pinnately 3-7 lobed; leaflets usually small and rounded, often dentate or lobulate, terminal leaflet 3 (rarely 5)-lobed. Racemes terminal, many-flowered. Flowers white. Sepals clawed, narrow. Stamens 6. Ovary subsessile, linear; ovules 2-seriate; style very short; stigma entire, hairy. Siliqua compressed, linear, tapering at both ends, not beaked; valves with distinct mid-rib, curling up elastically on dehiscence.

Not very common; locally abundant in damp and shady places.

Fls. & Frts.: February-June.

Specimens examined: Regional Plant Resource Centre (Ekamrakanan) premises (Khurda district), 1.2.1990, *P.C. Panda* 558; 16.5.1995, *R.K. Moharana* 4776; State Botanical Garden, Barang (Cuttack district), 6.9.1992, *P.C. Panda* 2977.

Distribution: Indomalaya (INDIA-U.P., M.P., H.P., West Bengal, Bihar and Orissa).

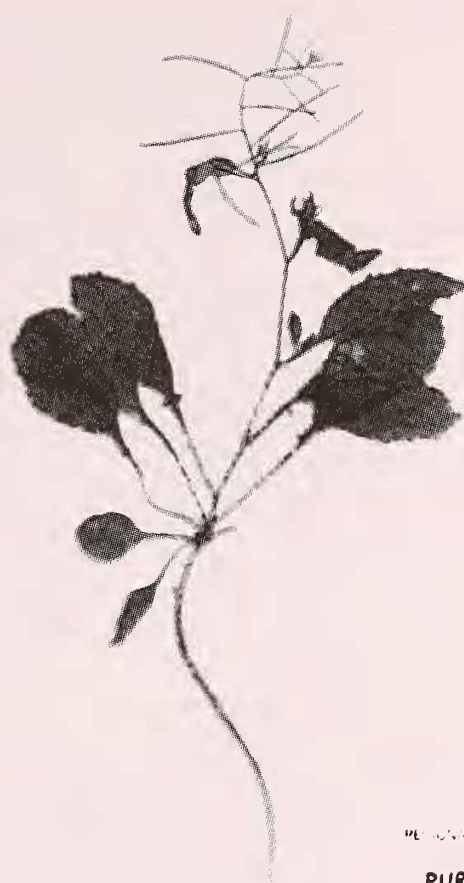
Rorippa montana (Hook. f. & Thoms.) Small, Fl. S.E.U.S. (ed. 2) 1336. 1913. *Nasturtium montanum* Wall. ex Hook. f. and Thoms. J. Proc. Linn. Soc. Bot. 5: 139. 1861.

Erect, glabrous, perennial herbs. Leaves usually entire, crenate, elliptic-oblong, alternate. Racemes terminal, many-flowered, elongating in fruiting. Flowers small, yellow. Sepals elliptic-oblong, not pouched. Petals 4. Ovary sub-sessile, linear; style short; stigma entire on obscurely 2-lobed, hairy. Fruit linear, terete, dehiscent, 2.5-3.5 cm long, less than 0.1 cm wide; seeds many, 2-seriate. (Fig. 1)

Occasional, a weed in moist shady localities in gardens.

Fls. and Frs.: December-June.

Specimens examined: Regional Plant Resource Centre (Ekamrakanan) Campus, (Khurda



REGIONAL PLANT RESOURCE CENTRE
BHUBANESWAR
PURI DISTRICT
555
Rorippa montana (Hook. f. & Thoms.) Small
BRASSICACEAE
Ekamrakanan, Bhubaneswar
30-1-90
Erect herbs. Flowers yellow.
Fruit terete, dehiscent, seeds
many, 2-seriate. Occasional in
moist shady places.
S.C. Jena
Dr P.C. Panda

Fig. 1 Herbarium specimens of *Rorippa montana* (Hook. f. & Thoms.) Small.

District), 30.1.1990, *S.C. Jena* 555; 5.3.1990, *R.K. Moharana* 3630.

Distribution: Indomalaya (INDIA-U.P., M.P., H.P., Karnataka and Orissa).

Note: Babu (1977) has cited *Nasturtium montanum* Wall. ex Hook. f. and Thoms. [= *Rorippa montana* (Hook. f. & Thoms.) Small] as a new synonym under *R. indica* (Linn.) Hiern and considered the former as conspecific with the latter. Saxena and Brahmam (1994) have also held the above view in taxonomic treatment of these two taxa based on study of pertinent literature; but no specimens have been examined to arrive at this conclusion. The description of leaf and fruit provided

in these works are also different from the one given above. After critical study of a large number of live specimens in the field and also herbarium materials of both *Rorippa indica* and *R. montana*, we are of the opinion that *R. indica* and *R. montana* are undoubtedly two distinct species which can be distinguished from each other by the following consistent key characters. A similar treatment has also been followed by Singh (1984) and Panigrahi and Murti (1989).

1. Sub-erect herbs. Leaves pinnatifid; pinnae ovate-lanceolate, dentate. Fruit 1.5 to 1.75 cm long and 0.2-0.3 cm wide *R. indica*
- Erect herbs. Leaves usually not lobed, crenate, elliptic-oblong. Fruit 2.5 to 3.5 cm long, never more than 0.1 cm wide *R. montana*

September 7, 1995

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33. *HELICTERES ISORA* - A KEYSTONE SPECIES

Helicteres isora Linn. (Sterculiaceae) is a common undergrowth shrub in the deciduous forests of southern India. Very little has been reported on the pollination aspects of *Helicteres*, though it is known to be frequented by birds (Subramanya and Radhamani 1993). These authors have reported that three species of birds visit it: Hill Myna (*Gracula religiosa*), Purplerumped Sunbird (*Nectarinia zeylonica*) and Purple Sunbird (*Nectarinia asiatica*). In another note (Santharam 1996), I discuss the visitation patterns in terms of frequency and temporal activity of the various visitors to a clump of *Helicteres*. Though it exhibits typical characteristics of a bird flower, *Helicteres* is also frequented by several butterflies. But they visit fewer flowers in comparison with birds (Santharam 1996).

These observations were made at Mundanthurai Tiger Reserve in Tamil Nadu and the Peechi-Vazhani Wildlife Sanctuary in Kerala. The observations at the former site were made during January, 1988 and at the latter site between August 1991 and May 1993. At Peechi-Vazhani, flowers

were seen in the months of August to October while at Mundanthurai, flowers were present in the month of January. The differences in flowering dates at the two sites may be related to the rainfall patterns at the sites: the Kerala side of the Western Ghats receives rain in the months June-August (Southwest monsoon) while in Tamil Nadu, rain is delayed until the onset of the Northeast monsoon in late October and last until late December.

I present a list of animals (Table 1) that were seen visiting the flowers at the two sites. This list includes 21 species of birds, nine species of butterflies and one mammal. It may be noted that the species listed from Peechi may not be complete as no intensive studies were conducted.

This impressive list of animals seen feeding on the nectar of this shrub indicates that it may be an important keystone species for the nectar-feeding guild. Besides, this is a very common species, flowering synchronously at the beginning of the dry season, earlier than that of the other bird flowers such as *Bombax*, *Erythrina* and *Butea* (pers. obs.).